ORDERS: 8300.10 and 8400.10

APPENDIX: 3

BULLETIN TYPE: Joint Flight Standards Handbook Bulletin for Air Transportation (HBAT) and Airworthiness (HBAW)

BULLETIN NUMBER: HBAT 00-11, HBAW 00-10

BULLETIN TITLE: Flight Operational Quality Assurance (FOQA) Program Approval Procedures and Continued Program Monitoring

EFFECTIVE DATE: 07/26/00

TRACKING NUMBER: N/A

APPLICABILITY: This bulletin applies to Principal Operations Inspectors and Principal Maintenance Inspectors who have oversight responsibility for part 121 or 135 certificate holders.

THIS BULLETIN REQUIRES PTRS INPUT. SEE ITEM #6.

---

1. PURPOSE. This handbook bulletin updates current handbook guidance by defining the Flight Operational Quality Assurance (FOQA) program approval process and the role of the Principal Operations Inspector (POI) and the Certificate Holding District Office (CHDO) in monitoring continuing FOQA operations for Title 14 of the Code of Federal Regulations (14 CFR) part 121 and part 135 air carriers. It should be considered interim guidance pending the issuance of a new 14 CFR part 13 FOQA rule concerning enforcement and the issuance of a final 14 CFR part 193 rule concerning the disclosure of information obtained from voluntary safety reporting programs.

2. BACKGROUND. FOQA is a program for the routine collection and analysis of digital flight data generated during normal line operations. FOQA programs provide more information about, and greater insight into, the total flight operations environment. FOQA data is unique because it can provide objective information that is not available through other methods. The information and insights provided by FOQA can improve safety by significantly enhancing training effectiveness, operational procedures, maintenance and engineering procedures, and air traffic control procedures.

A. Administrator's Policy Statement. The Federal Aviation Administration (FAA) Administrator has issued a Policy Statement concerning FOQA, which was published on December 7, 1998 in the Federal Register, Volume 63, Number 234, pages 67505-67506. That policy statement is as follows:

(1) “The FAA encourages voluntary airline collection of de-identified digital flight data recorder data to monitor line operations on a routine basis, along with the establishment of procedures for taking corrective action that analysis of such data indicates is necessary in the interest of safety. The FAA also recognizes the industry's concerns regarding the use of de-identified FOQA information to undertake enforcement actions. The FAA therefore has determined that the appropriate policy is to refrain from using deidentified FOQA information to undertake enforcement actions except in egregious cases, i.e., those that do not meet the conditions listed in section 9, paragraph c of Advisory Circular 00-46D governing the Aviation Safety Reporting Program. This policy applies only to information collected specifically in a FOQA program that is FAA-approved.

(2) “For purposes of this policy, the term ‘FOQA program’ means an FAA-approved program for the routine collection and analysis of in-flight operational data by means of a DFDR. The program would include a description of the operator's plan for collecting and analyzing the data, procedures for taking corrective action that analysis of the data indicates is necessary in the interest of safety, procedures for providing the FAA access at the carrier's offices to de-identified aggregate FOQA information, and procedures for informing the FAA as to any corrective action being undertaken. The FAA will be able to monitor safety trends evident in the FOQA data and the operator's effectiveness in correcting adverse safety trends.”

B. In order to qualify for the enforcement protection provided in the Administrator’s policy statement, an air carrier must have an approved FOQA program. The document that is used to describe the air carrier's program is known as the FOQA Implementation and Operations (I&O) Plan. The FAA approval process for an air carrier's FOQA I&O Plan must ensure that the operator has identified adequate procedures, organizational resources, and material resources to collect, analyze, and act upon information provided by the FOQA data.

C. Air Carrier Acquisition and Analysis of FOQA Data. In a FOQA program, data is collected from the aircraft using either special acquisition devices, such as Quick Access Recorders (QAR) or directly from the Flight Data Recorder (FDR). Using one of several available transmission methods, data is periodically

retrieved and sent to the air carrier's FOQA office for analysis. This office usually resides within the flight safety organization at the air carrier. The data is then verified and analyzed, utilizing specialized processing and analysis software designed to convert the flight data into usable information.

(1) The analysis software extracts FOQA events from the raw digital data stream, based on parameters and associated threshold values (e.g., descent rate in excess of 1000 feet per minute on approach) that are specified by the air carrier. Events are filtered by phase of flight. The analysis typically focuses on events that fall outside normal operating boundaries, as determined by the air carrier’s operational standards, as well as the manufacturer’s aircraft operating limitations. The FOQA office then reviews the events to assess their validity and their potential significance. FOQA events are then marked for appropriate disposition. The FAA is not a participant in this initial event screening process.

(2) Unless the FOQA event requires immediate action in the interest of safety, significant FOQA events will be aggregated for further review by an oversight committee typically comprised of representatives from the appropriate air carrier departments, such as flight operations, flight standards and training, and aircraft maintenance.

(3) Data that could be employed to determine flight crewmember identity are removed from the electronic record as part of the initial event extraction process. However, air carrier FOQA programs typically do provide for a gatekeeper, who is provided with a secure means of determining identity information for a limited period of time, in order to enable follow-up inquiry with a particular flightcrew concerning a particular FOQA event, when needed for further insight into the circumstances surrounding an event. The gatekeeper is typically, though not necessarily, a member of the air carrier's bargaining unit. The concurrence of the designated air carrier pilot's bargaining unit representative is typically required in order for follow-up with an individual pilot to be initiated. Follow-up inquiries of individual crewmembers concerning FOQA events will in all cases be accomplished by a designated member of the air carrier's bargaining unit.

D. Aircraft Maintenance Monitoring. Depending on the fleet make/model/series, FOQA data may provide more detailed and complete information for aircraft maintenance monitoring purposes than is available from other electronic sources, including the FDR. It can also provide such information over the entire block-to-block duration of a flight. The cost-benefits of a FOQA program may be substantial in the maintenance arena. Although trend analysis is as

important for maintenance as it is for flight operations, aircraft maintenance applications will necessarily require a more focused analysis by specific aircraft tail number and individual flight than is typically needed for flight operations monitoring. The purpose of such analysis is not to monitor pilot performance, but rather to assess the status of maintenance needs on an individual, aircraft-specific basis. Depending on the goals that an air carrier establishes for its FOQA program, the operator may or may not elect to include aircraft maintenance monitoring as part of its FOQA program.

E. FAA Access to FOQA Data. The Administrator's policy statement requires only that the FAA be provided with access to de-identified, aggregate FOQA information. De-identified means that the flight number has been removed and the flight date has been replaced with month and year. Aggregate information means FOQA data that has been grouped along meaningful statistical dimensions, such as the frequency of unstable approaches at a particular airport over a particular period of time for a particular fleet. Because the FOQA information to which the FAA has access is both de-identified, and aggregated, the FAA will not be in possession of FOQA information that could be employed for enforcement action against individual pilots.

F. Air Carrier FOQA Program Development Process. The development of a FOQA program occurs in three stages.

(1) The first of these is a planning stage in which policy and direction for the FOQA effort are developed and necessary resources are committed to implement the program. The policies, procedures, resources, and operational processes for collecting, managing, and utilizing FOQA data are then laid out in the I&O Plan as the program blueprint and is submitted to the FAA to obtain approval for the program.

(2) The second stage is implementation. It will begin once the I&O Plan has been approved and will probably start with a limited number of aircraft. It will involve the installation of the equipment, training of personnel, and collection and processing of data from the aircraft. Work during this stage should be focused on the validation of the program, including its logistics and security mechanisms.

(3) The final stage is continuing operations. Once the air carrier has validated its processes and the accuracy of data collection and analysis, it will officially launch the program. Data collected can then be used in trend identification, determination of corrective actions, and monitoring of effectiveness of those actions. Expansion of the program will occur as outlined in the I&O Plan, or as documented in subsequent I&O Plan revisions.

3. FOQA IMPLEMENTATION AND OPERATIONS PLAN.

A. Required Content of the FOQA I&O Plan. The I&O Plan should describe the following elements:

(1) Program goals.

(2) Airborne hardware, analysis software, and other equipment to be used in the program.

(3) The fleet(s) to be equipped for FOQA.

(4) The organizational structure for the FOQA program.

(5) Procedures for data acquisition and handling.

(6) Procedures for data analysis and reporting.

(7) A plan to take corrective action when adverse safety trends are discovered.

(8) Policies on data retention, and security, and crew contact.

(9) Policies allowing FAA access to de-identified aggregate data and information on corrective actions undertaken.

(10) How the document will be maintained, including the revision process.

(11) Appendices, which should include:

(a) A copy of the Letter of Agreement on FOQA with the pilots' collective bargaining unit (if applicable).

(b) List of Events, parameters, and threshold values to be used in the program for each FOQA-equipped aircraft fleet.

B. Submission of the FOQA Implementation and Operations Plan.

(1) The air carrier shall submit the proposed I&O Plan with a completed I&O Plan checklist, ensuring that essential elements have been covered in the plan, and include a cover letter addressed to the POI requesting approval of the plan. A copy of an I&O Plan checklist is included in Appendix 1. A copy of the cover letter, plan, and checklist should also be forwarded by the air carrier to AFS-230. Electronic transmission of this documentation to AFS-230 is encouraged.

(2) Although the operator is required to identify its planned FOQA airborne and ground-based equipment in its initial FOQA I&O Plan, and should include changes to this equipment in I&O Plan revisions, the purpose of this requirement is to ascertain proposed system capabilities, rather than to approve the air carrier's selection of a particular brand or vendor.

C. Air Carrier FOQA Program Implementation. Once the FOQA I&O Plan has been approved, the air carrier should begin the implementation of a program for analyzing, validating, and taking corrective actions based on FOQA data. It is the responsibility of the air carrier to establish procedures for identifying operational deficiencies and taking corrective action. Overall management of this process is normally done through a FOQA oversight committee (or a functionally equivalent body) that is composed of representatives from flight standards, training, maintenance, flight operations, and flight safety. The FOQA oversight committee should meet on a periodic basis (e.g., monthly or quarterly) to review FOQA aggregate trend information, formulate corrective actions for adverse trends, and report on the results of previously taken actions.

D. Revisions.

(1) Changes will occur in an air carrier’s program as they assimilate new technologies, modify event definitions, and change structures to meet their program’s growing needs. Changes are likely to be particularly frequent during the early stages of an operator's FOQA program. When changes occur to previously approved I&O Plan content, the I&O Plan should be revised to document those changes.

(2) Revisions to previously approved FOQA I&O Plans should be accomplished in accordance with standard revision control methodology (Revision Control page with remove-and-replace instructions by page, list of effective pages, and both revision number and revision date on every page of the document). Revisions should be submitted by the operator to the POI and to AFS-230. Electronic transmission of revisions to AFS-230 is encouraged.

4. ACTION.

A. Review and Approval of FOQA Implementation and Operations Plans.

(1) When a plan is submitted, AFS-230 is responsible for initiating coordination with the POI and providing the POI with assistance in assessing the technical adequacy of the plan. The

I&O Plan checklist in Appendix 1 shall be used by the FAA as an aid in determining the adequacy of the plan.

(2) Decisions with respect to the selection of software and equipment vendors should be left entirely to the air carrier. However, the FAA should make an assessment for both the initial plan and subsequent revisions - whether or not the functionality described for these products appears to be adequate to accomplish the program goals described in the operator's plan.

(3) Evaluation of the I&O Plan should center on whether or not the structure set up for the FOQA program will realistically address the collection and analysis of data as well as procedures for taking corrective actions. Because of differences in air carriers, the POI is in the best position to assess whether the proposed FOQA program organization and amount of resources dedicated to it are adequate.

(4) If the air carrier has elected to include aircraft maintenance monitoring as part of its FOQA program, the POI is responsible for coordinating with the Principal Maintenance Inspector (PMI) in reviewing those portions of the initially proposed I&O Plan, and subsequent revisions thereto, that pertain to aircraft maintenance.

(5) The POI and AFS-230 should mutually review comments from their respective offices on the proposed plan, and establish a consensus concerning whether the plan should be approved. Inadequacies in proposed plans will be communicated by a letter initiated by AFS-230 for joint signature of the POI and the manager of AFS-230, and transmitted to the operator by the POI. Similarly, upon concurrence by the POI and AFS-230 that the plan should be approved, AFS-230 will initiate a letter of approval for the joint signature of the POI and the manager of AFS-230. Upon the POI's signature, the POI is responsible for transmission of the approval letter to the air carrier.

B. Monitoring of Approved Programs.

(1) Once the FOQA I&O Plan is approved, the CHDO should monitor the overall progress of program implementation. The CHDO should participate in the periodic meetings of air carrier’s FOQA oversight committee. The focus of these meetings should be on the identification and correction of potential threats to safety uncovered by FOQA aggregate trend information. Due to the de-identification and aggregation processes used, the association of individual flight crewmembers with events or specific flights should not be possible, nor is it consistent with the Administrator's FOQA policy for the FAA to request specific

crewmember identity or individual flight information from the operator's FOQA data.

(2) The main purpose of FOQA programs is to identify adverse safety trends, and to proactively initiate corrective action before such trends can lead to accidents. The operator has the primary responsibility for that activity. However, it is incumbent upon the FAA to verify that the air carrier is in fact fulfilling that responsibility. While the purpose of FAA participation in FOQA oversight committee review meetings is primarily to observe, it is appropriate for the inspector attending the meeting to offer suggestions or comments that could be helpful in correcting adverse safety trends.

C. Monitoring of FOQA Aggregate Information.

(1) The POI and Aircrew Program Managers (APM)must be provided with free and open access to de-identified aggregate FOQA information on the air carrier’s property upon request. If the operator's approved I&O Plan includes maintenance monitoring as part the FOQA program, access to aggregate FOQA information must also include the PMI and Partial Program Managers (PPM). These CHDO personnel should periodically request access to FOQA aggregate information from FOQA-equipped fleets. This information should be reviewed to track both positive and adverse trends concerning the operations or maintenance of a given aircraft fleet. Together with other information available to the FAA, the FOQA information can provide an improved basis for managing surveillance, as well as for accomplishing the FAA's air carrier oversight responsibilities.

(2) Because of the sensitivity of this information, no written or electronic records, including notes, should be taken from the air carrier’s property (pending final rulemaking under part 193, and the designation of FOQA information as protected from disclosure under that part, this guidance will be amended in the future).

D. Acceptance Process for Revisions. Revisions to approved I&O Plans do not require FAA letters of approval. Because such changes can be potentially frequent and voluminous, revisions to approved plans shall be considered to be accepted by the FAA, unless the FAA notifies the carrier in writing within 45 days of submission that the revision is not accepted. Either the POI or AFS-230 should initiate mutual coordination if it appears to either office that a revision should not be accepted, in which case AFS-230 will prepare a letter of non-acceptance for joint signature of the POI and the manager of AFS-230, to be transmitted by the POI to the operator. In addition, unless the POI determines that it is inappropriate for a given operator, the air carrier should be permitted to consolidate and submit revisions on a quarterly basis throughout the calendar year, rather than submitting each revision as it occurs. This

procedure will reduce workload for both the air carrier and for the FAA.

5. WITHDRAWAL OF APPROVAL. FOQA is a voluntary program, and the air carrier may therefore elect at any time to terminate its program. The FAA may also elect at any time to withdraw approval of the operator's FOQA I&O Plan. The Administrator's policy statement extends certain enforcement protection for FOQA based on the expectation that the operator will act upon FOQA information indicative of an adverse safety trend or a continuing violation. If the FAA determines that the operator is making no effort to develop and implement a plan of corrective action for such items, and the air carrier is not responsive to FAA efforts to elicit compliance with this requirement, withdrawal of program approval is appropriate. Withdrawal of approval action may be initiated by either the POI or AFS-230, subject to coordination between each office. AFS-230 will then initiate a withdrawal of approval letter for joint signature of the POI and the manager of AFS-230, to be transmitted to the operator by the POI.

6. PROGRAM TRACKING REPORTING SUBSYSTEMS (PTRS) INPUT. In order to track FOQA monitoring activities the inspector shall enter the code FOQA in the National Use block of the PTRS Data Sheet (PTRS Tracking Form 8000-36) for work associated with oversight of the operator's FOQA program. It is also important to complete the Designator Block with the appropriate air carrier designator code.

7. INQUIRIES. This bulletin was developed by AFS-230. Any questions regarding this handbook bulletin should be directed to AFS-230 at (703)661-0275.

8. LOCATION. The information in this bulletin will be incorporated into the appropriate inspector handbooks. Inspectors should make a notation in the margin of FAA Order 8400.10, Air Transportation Operations Inspector's Handbook, Volume I, Chapter 4, Section 2; and Order 8300.10, Airworthiness Inspector's Handbook, Volume IV.

/s/
L. Nicholas Lacey
Director, Flight Standards Service

ATTACHMENT: Appendix 1, I&O Plan Checklist

Appendix 1. FOQA Implementation and Operations Plan Checklist

The following checklist may be used by the certificate holder and shall be used by the FAA to ensure that the information that should be addressed in an air carrier's FOQA Implementation and Operations (I&O) Plan is provided. The proposed I&O Plan and the completed checklist should be submitted by the certificate holder to the POI and to FAA HQ, AFS-230. The FAA will use the checklist to verify that the information needed for initial approval of a FOQA program has been specified. AFS-230 will coordinate review and approval of proposed programs with local FAA offices.

The "Response" column should be completed for each question. Appropriate responses are "Yes," "No," or "NA" (not applicable). For all "No" or "NA" responses, the air carrier's completed checklist should include a brief statement describing why that item was marked "No" or "NA."

The "Reference" column should have been completed by the air carrier to identify the location of a particular checklist item in the air carrier's proposed I&O Plan (e.g., I&O Plan, Section 2.1; event definitions, Appendix A, etc.).

	Response	Reference	Comment
General			
1. Has approval of the I&O Plan been requested by the certificate holder in a cover letter addressed to POI, accompanying submission of the plan?	❑ Yes ❑ No ❑ NA		
2. Has a copy of the cover letter and plan been forwarded to FAA HQ /AFS-230?	❑ Yes ❑ No ❑ NA		

Appendix 1. (continued)

3. Does the I&O Plan identify the personnel and system equipment resources committed to support of the FOQA program?	❑ Yes ❑ No ❑ NA		
4. Does the I&O Plan acknowledge the requirement to document revisions in accordance with standard revision control methodology (Control Page identifying pages to add, delete, or replace, a List of Effective Pages, and both revision number and date on each page)?	❑ Yes ❑ No ❑ NA		
5. Does the I&O Plan acknowledge that following initial FAA approval, ensuing modifications to the FOQA program must be documented in revisions submitted to the POI and AFS-230?	❑ Yes ❑ No ❑ NA		
I&O Plan			
1. Have the goals and objectives of the FOQA program been	❑ Yes ❑ No ❑ NA		

Appendix 1. (continued)

clearly specified?			
2. Have the major stakeholders within the air carrier been clearly identified?	❑ Yes ❑ No ❑ NA		
3. Has a copy of an agreement with the pilot association for FOQA data usage been included as an appendix?	❑ Yes ❑ No ❑ NA		
4. Are air carrier data safeguard and protection mechanisms described?	❑ Yes ❑ No ❑ NA		
5. Are the air carrier fleets (make, model, series) which are targeted for participation in the FOQA program identified?	❑ Yes ❑ No ❑ NA		
6. Are the capabilities of the planned airborne equipment for FOQA described?	❑ Yes ❑ No ❑ NA		
7. Does the plan identify provisions for airborne equipment maintenance and support?	❑ Yes ❑ No ❑ NA		
8. Is a fleet installation plan specified?	❑ Yes ❑ No ❑ NA		

Appendix 1. (continued)

9. Are the capabilities of the planned ground data replay and analysis system (GDRAS) described?	❑ Yes ❑ No ❑ NA		
10. Does the plan identify provisions for GDRAS hardware and software maintenance?	❑ Yes ❑ No ❑ NA		
11. Does the plan describe other key technology components of the air carrier's FOQA program (e.g. wireless data downloading)?	❑ Yes ❑ No ❑ NA		
12. Is a single point of contact who is responsible for overseeing the FOQA program designated?	❑ Yes ❑ No ❑ NA		
13. Is the air carrier's organizational structure for oversight and operation of the FOQA program defined?	❑ Yes ❑ No ❑ NA		
14. Are the roles and responsibilities of key air carrier personnel and teams described?	❑ Yes ❑ No ❑ NA		

Appendix 1. (continued)

15. Are a schedule and timeline for implementing the FOQA program specified?	❑ Yes ❑ No ❑ NA		
16. Are FOQA program start-up criteria specified (e.g. equipment installation, STC completion, etc.)?	❑ Yes ❑ No ❑ NA		
17. Is a plan for training FOQA monitoring team members described?	❑ Yes ❑ No ❑ NA		
18. Is a plan for educating pilots about the FOQA program described?	❑ Yes ❑ No ❑ NA		
19. Is a plan for educating senior management and stakeholders described?	❑ Yes ❑ No ❑ NA		
20. Are procedures for implementing and auditing security mechanisms specified?	❑ Yes ❑ No ❑ NA		
21. Is a data storage and retention policy specified?	❑ Yes ❑ No ❑ NA		
22. Are flight data collection and retrieval procedures specified?	❑ Yes ❑ No ❑ NA		

23. Are the procedures for defining fleet specific events and associated parameters described?	❑ Yes ❑ No ❑ NA		
24. Are the fleet specific event definitions, including trigger limits for each event severity classification, included as an appendix?	❑ Yes ❑ No ❑ NA		
25. Are the procedures for validating, refining, and tracking event definitions described?	❑ Yes ❑ No ❑ NA		
26. Does the plan acknowledge that updates to FOQA event definitions must be included in I&O Plan revisions submitted to the FAA?	❑ Yes ❑ No ❑ NA		
27. Are procedures for data review and evaluation specified?	❑ Yes ❑ No ❑ NA		
28. Does the plan provide for notifying appropriate air carrier departments of adverse trends revealed by FOQA	❑ Yes ❑ No ❑ NA		

data, including maintenance, engineering, flight operations, and flight crew training?			
29. Are procedures for taking, tracking and following-up on corrective actions specified?	❑ Yes ❑ No ❑ NA		
30. Are guidelines for crew contact and follow-up described?	❑ Yes ❑ No ❑ NA		
31. Is a description included of how FOQA system procedures will be documented?	❑ Yes ❑ No ❑ NA		
32. Is a description of the process for joint FAA/air carrier periodic reviews of the FOQA program and associated aggregate data provided?	❑ Yes ❑ No ❑ NA		
33. Are provisions for local FAA (POI/APM's, and PMI/PPM's if plan includes maintenance) on-site access to FOQA aggregate data identified?	❑ Yes ❑ No ❑ NA		